Project : BROWNSVILLE SHIP CHANNEL, TEXAS

SUMMARY OF LABORATORY TEST RESULTS

Boring No. 89-40

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	M c (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	P L (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
1	0 - 2	0.25		Gray, SANDY CLAY, soft	CL	33.0	90.7	120.6	42	18						0.00	
2	2 - 4	0.25		Gray, SANDY CLAY, soft	CL	35.4											
3	4 - 5.5		WOH	Gray, SANDY CLAY, very soft	CL						100.0	100.0	99.8	97.2	60.6		
4	8 - 10	0.25		Tan, SANDY CLAY, soft	CL	32.2	80.0	105.7	76	32	100.0	100.0	100.0	99.5	84.6	0.10	
5	10 - 11.5		WOH	Gray, SILT,very loose, slightly sandy	ML												
6	12 - 13.5		13	Gray, SILT, medium dense, slightly sandy	ML												
7	14 - 16	1.75		Tan, CLAY, stiff, silty	CH	32.6											
8	16 - 18	0.75		Gray, CLAY, firm, slightly silty	CH	31.2	89.5	117.4	52	22	100.0	100.0	100.0	100.0	99.6	0.45	0.71
9	18 - 20	1.00		Gray, CLAY, stiff, slightly silty	CH	35.0											
10	20 - 22	0.25		Gray, CLAY, soft, slightly silty	CH	36.4			61	26							
11	22 - 23.5		WOH	Gray, SILT, very loose, clayey	ML	31.8											
12	24 - 26	1.50		Gray, LEAN CLAY, stiff, slightly silty	CL	31.4	86.8	114.1	44	20	100.0	100.0	100.0	100.0	100.0		1.00
13	26 - 28	1.00		Gray, LEAN CLAY, stiff, slightly silty	CL	33.1											
14	28 - 30	0.50		Gray, CLAY, firm, slightly silty with shell fragments	CH	29.7											
15	30 - 32	0.50		Gray, CLAY, firm, slightly silty with shell fragments	CH	31.4											
16	32 - 34	0.75		Gray, CLAY, firm, slightly silty	CH	34.7	79.5	107.1	54	21	100.0	100.0	100.0	100.0	100.0	0.40	0.60
17	34 - 36	0.50		Gray, CLAY, firm, slightly silty	CH	32.8											
18	36 - 38	0.50		Gray, CLAY, firm, slightly silty with shell fragments	CH	29.0											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content, q u : Unconfined Compressive Strength

Project : BROWNSVILLE SHIP CHANNEL, TEXAS

SUMMARY OF LABORATORY TEST RESULTS

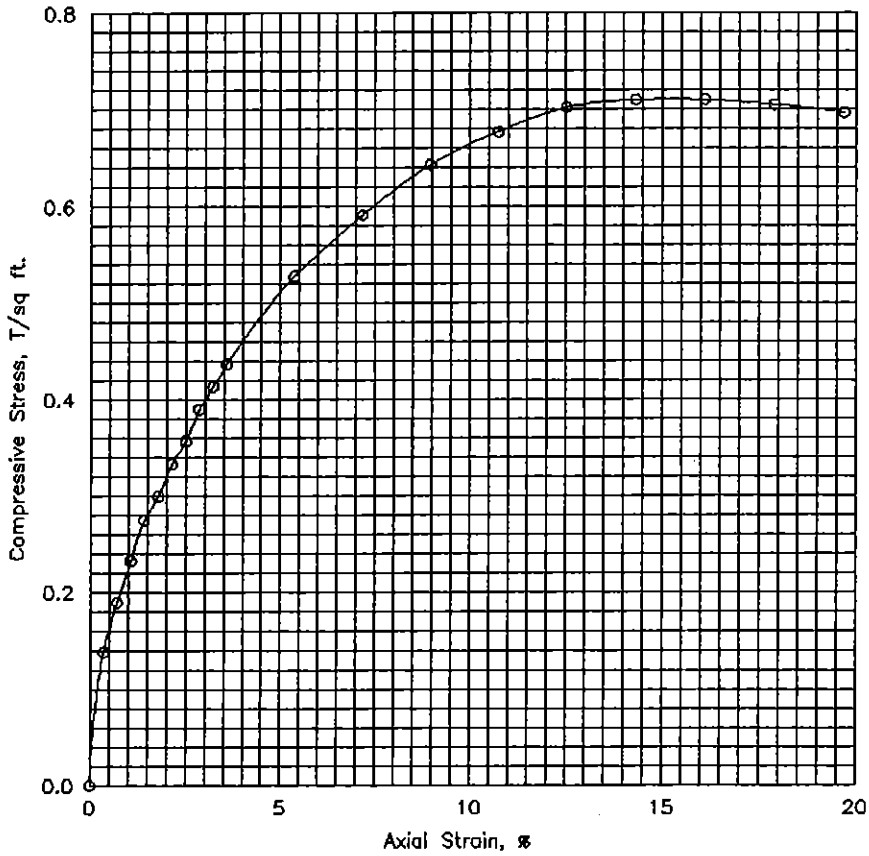
Boring No. 89-40

S #	Depth (ft)	P P (tsf)	SPT Blows per Foot	Visual Classification	U S C	M c (%)	Dry Unit Wt (pcf)	Wet Unit Wt (pcf)	L L (%)	P L (%)	Mechanical Analysis % Passing #4	#10	#40	#100	#200	Torvane Shear Strength (tsf)	q u (tsf)
19	38 - 40	0.75		Gray, CLAY, firm, slightly silty with calcareous nodules	CH	31.0	89.7	117.6	54	26	100.0	98.9	98.3	97.7	96.8	0.30	0.29
20	40 - 42	1.50		Gray, CLAY, stiff, slightly silty	CH	31.3											
21	42 - 44	0.75		Gray, SILTY CLAY, firm	CL	32.5	86.6	114.8	35	19	100.0	100.0	99.9	99.9	99.5	0.30	0.42
22	45 - 47	1.25		Gray, CLAY, stiff	CH	30.6											

S # : Sample Number, P P : Pocket Penetrometer Reading, U S C : Unified Soil Classification, M c : Moisture Content, q u : Unconfined Compressive Strength

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.		1			
Type of Specimen		Undisturbed			
Initial: Water content	w_0	31.2 %	%	%	%
Initial: Void ratio	e_0				
Initial: Saturation	S_0	%	%	%	%
Initial: Dry density, lb/cu ft	γ_d	89.5			
Time to failure, min	t_f	13.17			
Unconfined compressive strength, T/sq ft	q_u	.71			
Undrained shear strength, T/sq ft	S_u	.35			
Sensitivity ratio	S_t				
Initial specimen diameter, in.	D_0	2.845			
Initial specimen height, in.	H_0	5.590			

Classification Gray, CLAY, Firm, slightly Silty and Sandy

LL	52	PL	22	PI	30	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-40 | Sample No. 8

Depth El 16-18 ft | Date 6/26/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

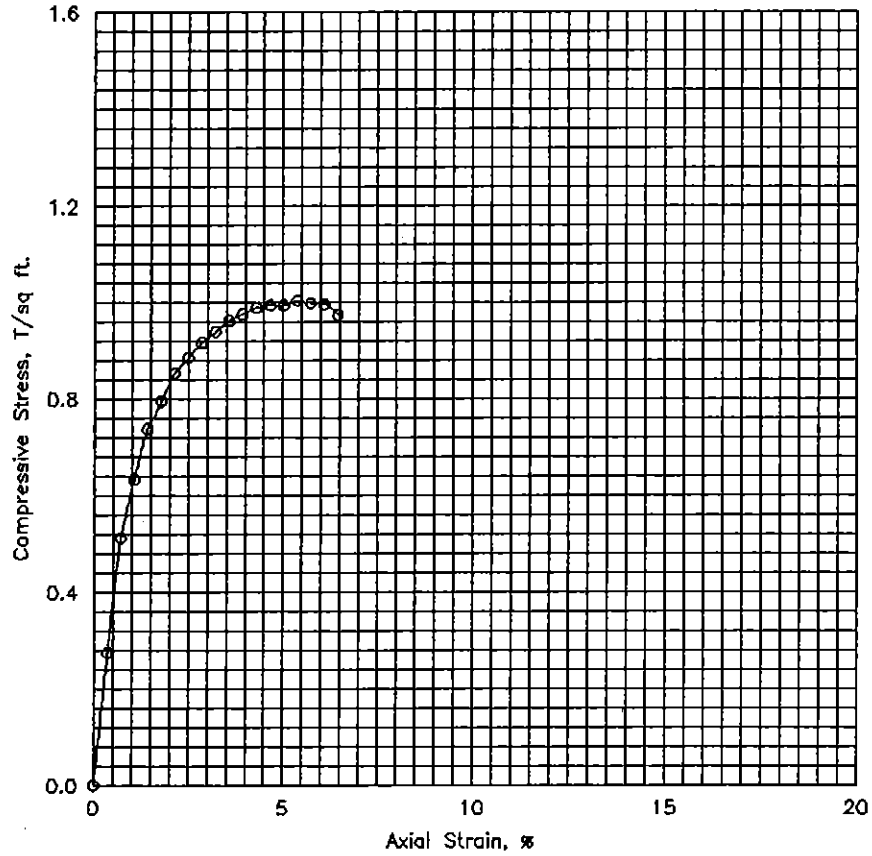
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	31.4 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	86.8			
Time to failure, min		t_f	5.23			
Unconfined compressive strength, T/sq ft		q_u	1.00			
Undrained shear strength, T/sq ft		S_u	.50			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.815			
Initial specimen height, in.		H_0	5.595			

Classification Gray, CLAY, Stiff, Silty

LL	44	PL	20	PI	24	G_s

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-4D | Sample No. 12

Depth El 24-26 ft | Date 6/26/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

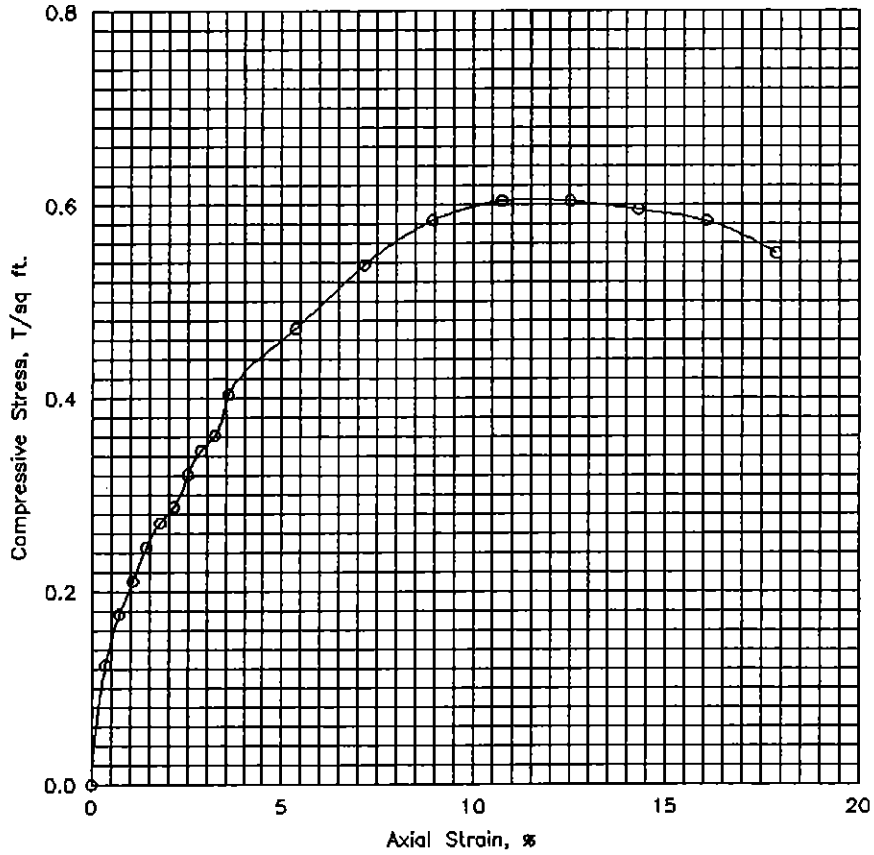
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	34.7 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	79.4			
Time to failure, min		t_f	10.35			
Unconfined compressive strength, T/sq ft		q_u	.60			
Undrained shear strength, T/sq ft		S_u	.30			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.815			
Initial specimen height, in.		H_0	5.595			

Classification Gray, CLAY, Firm, Silty

LL	54	PL	21	PI	33	G_s	

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-40 | Sample No. 16

Depth El 32-34 ft | Date 6/26/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

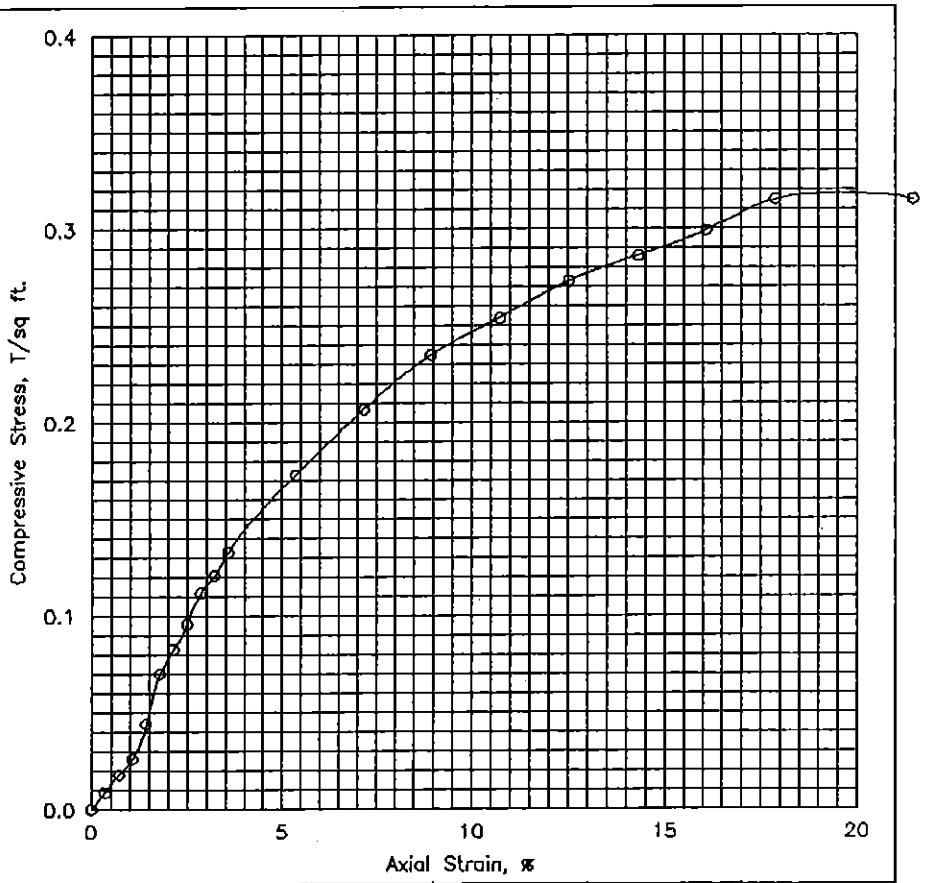
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_o	31.0 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	89.7			
Time to failure, min		t_f	14.30			
Unconfined compressive strength, T/sq ft		q_u	.29			
Undrained shear strength, T/sq ft		S_u	.14			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	2.815			
Initial specimen height, in.		H_o	5.595			

Classification Gray, CLAY, Firm, Silty w/ Calcareous nodules

LL	54	PL	26	PI	28	G_s

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-40 | Sample No. 19

Depth El 38-40 ft | Date 6/26/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

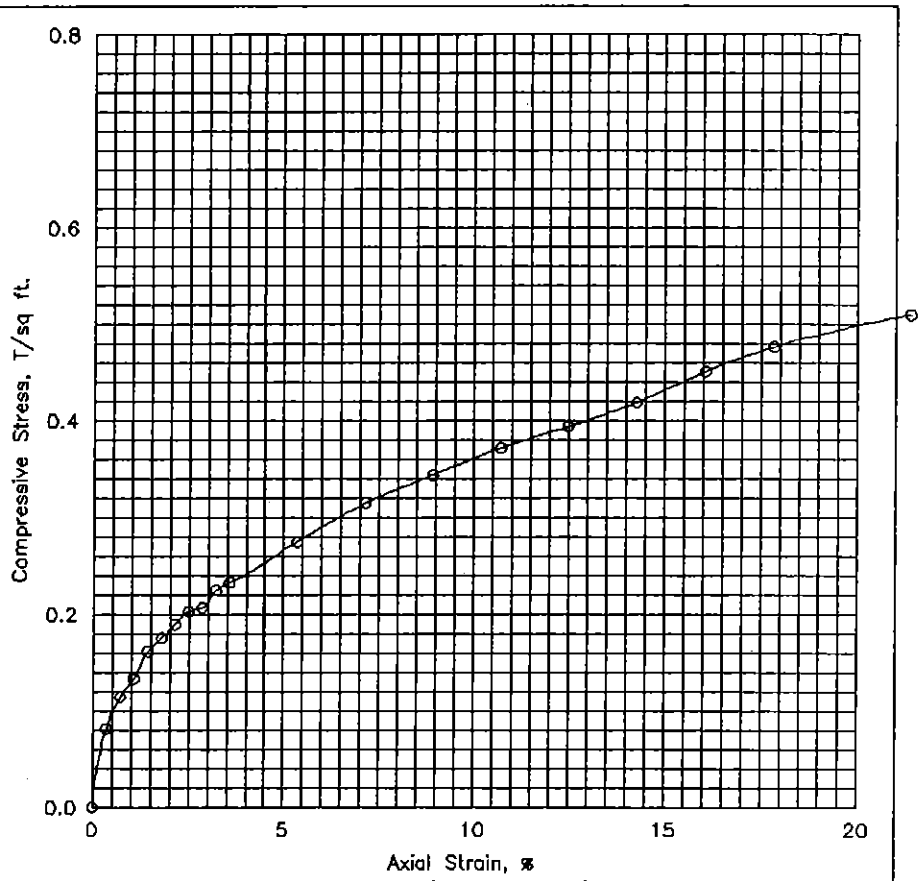
PLATE XI-2

Geotest Engineering, Inc.

PLATE

Job No. 14G403

Failure Sketches



☐ Controlled stress
☒ Controlled strain

Test No.			1			
Type of Specimen			Undisturbed			
Initial	Water content	w_0	32.5 %	%	%	%
	Void ratio	e_0				
	Saturation	S_0	%	%	%	%
	Dry density, lb/cu ft	γ_d	86.6			
Time to failure, min		t_f	13.03			
Unconfined compressive strength, T/sq ft		q_u	.42			
Undrained shear strength, T/sq ft		S_u	.21			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_0	2.700			
Initial specimen height, in.		H_0	5.610			

Classification Gray, CLAY, Firm, Silty

LL	35	PL	19	PI	16	G_s

Remarks

Project BROWNSVILLE SHIP CHANNEL, TEXAS

Area Between Port Isabel and Brownsville, Texas

Boring No. 89-40 | Sample No. 21

Depth El 42-44 ft | Date 6/26/90

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

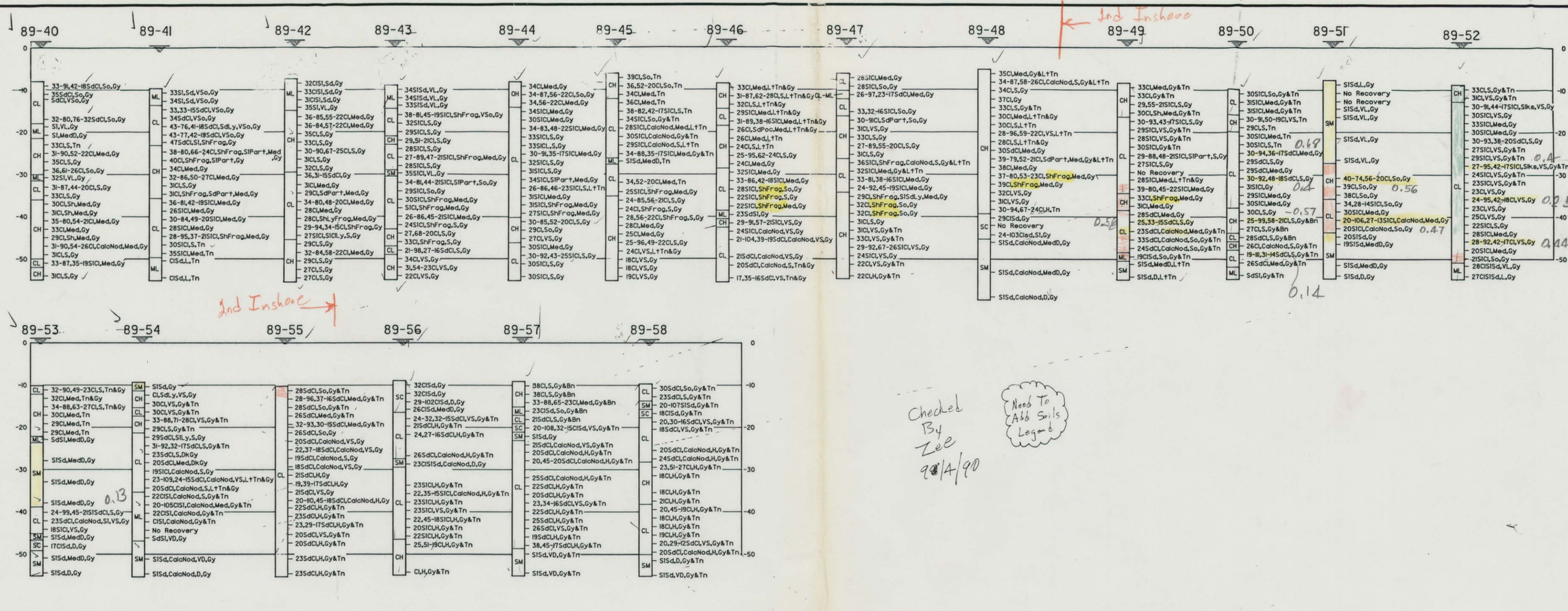
Geotest Engineering, Inc.

PLATE

DATE 8/14/90
INITIALS JFP

SUMMARY OF QUESTIONABLE
ERRONEOUS OR MISSING DATA
FOR
CONTRACT NO. DACW64-90-C-0024
PROJECT: LABORATORY TESTING OF SOIL SAMPLES, BROWNSVILLE SHIP CHANNEL, TEXAS

BORING NO.	SAMPLE NO.	COMMENTS ON TEST RESULTS
89-40	4	According to liquid limit, classification should be CH instead of CL. Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	5	Mechanical analysis was not performed.
	12, 16	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-41	3	Unit dry weight and unconfined compression tests requested but not performed.
	8, 11, 14, 16	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
89-42	4	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	6	Unconfined compression test result appears low.
	15 ✓	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	21	Unconfined compression tests result appear low. Moisture-density relationship as derived from moisture content and unit dry weight tests, appears unreasonable.
89-43	2	Unit dry weight test requested, not performed.
	9	Unconfined compression tests result on summary sheet does not agree with stress-strain plot. Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.
	12	Moisture-density relationship as derived from moisture content and unit dry weight tests appears unreasonable.



REVISION	DATE	DESCRIPTION	BY

OFFICE OF THE DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

CADD

DRAWN BY: X
TRACED BY: X
CHECKED BY: X
SUBMITTED BY:
CHIEF, SOILS DESIGN SECTION
APPROVED:
CHIEF, GEOTECH. & SURVEY BRANCH

BIH
Brownsville Channel Borings

APPROVED:
CHIEF ENGINEERING DIVISION
DATE:

Prepared under the direction of
Brink P. Miller, Col., C.E.,
District Engineer

SCALE: AS SHOWN
SPEC. DATE:
DRAWING NUMBER X
SHEET X OF X
FILE NO. X

DESIGN FILE: ZF1:(28,257)BROWN.DGN;1
CREATED BY: GRANDPA
ON: 30-AUG-1990
AT: 08:41